

Dining Car Sanitation in the United States

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ONE of the most striking features about dining cars is that while they resemble restaurants they are, at the same time, very dissimilar. True, the dining car is simply a special kind of restaurant—a restaurant on wheels, not differing in other essentials from other establishments where food is prepared and served. Dining cars and restaurants purchase the same kinds of food and prepare and serve them in the same manner, employing the same kinds of people. However, the one essential difference—mobility—creates problems which are peculiar to dining cars. It is one thing to supply and operate a stationary restaurant and quite another to supply and operate a restaurant that traverses hundreds of miles of railroad track.

A dining car superintendent has to anticipate and cope with seasonal peak loads and plan for large special movements of passenger traffic, such as are associated with military or emergency activities. Add to this the possibility of breakdowns, accidents, and other contingencies, and it is apparent that a sizable pool of fully equipped cars and trained personnel must be kept in reserve for such circumstances. This

is tantamount, if it can be imagined, to a large restaurant chain's keeping idle several expensive restaurants which are opened for business only during occasional rush periods.

The relationship between travel and the spread of disease has been recognized for centuries. Many hundreds of thousands of people in the United States travel on trains every day. About 80 million meals are served in dining cars each year. Thus, the fundamental rules of food service sanitation for preventing the spread of disease apply equally to dining cars and restaurants.

Since dining cars are rolling restaurants which cross State boundaries, their sanitary control is clearly a Federal responsibility. Indeed, it would be almost impossible to control them otherwise. The multiplicity of State and local health requirements and the variations in inspections by different health departments would result in intolerable confusion to carrier companies. More important, attempts by a State or local health department to follow through on an inspection or to investigate a disease outbreak attributed to food or drink consumed on a diner would be so complicated, after the conveyance had traveled into another State, that the efforts largely would be futile. Even negotiations between a health department and a railroad company would be difficult and complicated if the carrier's headquarters were located in another State (1).

Interstate quarantine authority was given to the Public Health Service by an act of Congress approved February 15, 1893 (2). This action was taken because of the continued presence of yellow fever during the summer months in the southern States. It was believed that the interstate railroads were a big factor in

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transmitting the disease from one State to another.

The interstate quarantine regulations, promulgated under the 1893 act and effective September 27, 1894, were the first concerted attempt to deal with the interstate spread of disease. These regulations have been revised and amended from time to time, most recently in 1951, to take cognizance of new developments in health and technology (3, 4).

Development of Diners

In the earliest days of railroading, before the advent of the diner, passengers had to depend largely on their own ingenuity for sustenance during a journey. The hardier and more resolute individuals risked the "eat-and-run" meals available at station stops; the less hardy or more discriminating resorted to carrying "shoebox" lunches. Both resources had obvious disadvantages. The food available at many stations in those days was generally stale and unsavory, while cleanliness and sanitation were questionable, at best. Lack of refrigeration and the presence of dust, soot, and insects often destroyed the appetite—and sometimes the health—of those who carried their lunches. The remaining choice, which many passengers took, was to go hungry (5).

Eastern railroads improved the intolerable situation by better surveillance and supervision of existing establishments. In the west the problem was more basic than amelioration because there were few restaurants of any sort. However, in 1876, a young railroader with the firm conviction that the traveling public would appreciate and generously reward anyone who began the reformation of the lowly railroad eating house established the first of what were destined to become famous station restaurants (6). Some of these exist today. His high standards of cleanliness, excellent cuisine, efficiency, and service developed into an art which became the model for such establishments and doubtless influenced the quality of railroad dining service.

Technological progress of the railroads and demands of the speed-conscious public who objected to meal stops made inevitable some form of food service en route. The first recorded at-

tempt to provide food aboard trains was made in 1862 by the Camden and Amboy Route, which converted a baggage car into a diner for use on its Washington express. The following year, the Philadelphia, Wilmington & Baltimore Railroad remodeled two day coaches for service as diners between Philadelphia and Baltimore. In 1867, George M. Pullman introduced "hotel cars," which were sleeping cars equipped with kitchen and dining facilities. The first full dining car was built by Pullman in 1868 for the Chicago & Alton Railroad (5).

Regarded at first as somewhat of a curiosity, dining cars were enthusiastically received by the traveling public, but they did not come into general use until the late 1800's, no doubt as a result of the intense railroad competition during that period. Dinner in the diner became as much a part of the romance of railroading as the familiar click of the wheel on the track. As the shoebox lunch gradually disappeared the dining car became the real heartbeat of the train and the showcase of the railroads.

Although the Public Health Service was charged with the control of sanitation on dining cars, other important duties and budgetary and personnel limitations made an aggressive program impossible. So for many years governmental inspection and supervision of sanitation on dining cars were sporadic. All commissioned officers of the Service were under orders to inspect dining cars while en route on trains on official business; occasionally, surveys of entire roads or of all dining cars entering a railroad center were conducted as the result of a complaint; but there was no continued, routine program for such work.

However, from the beginning the railroads set high standards for their dining car service. Gleaming tableware, spotless linen, immaculate and courteous waiters, gracious stewards, and tasteful decor—all of these contributed to the dining car's unique atmosphere.

The War Emergency

During and immediately after World War II, uncontrollable emergency conditions precluded the exactitude formerly devoted to the comfort of the traveling public. Warworkers and servicemen were on the move, often with their fami-

lies, traveling from one section of the country to another on an unprecedented scale. The heavy increase in wartime rail travel came when railroads were unable to purchase new equipment. At the same time well-trained employees were off to war or to more lucrative jobs, forcing dining service managers to employ large numbers of untrained personnel.

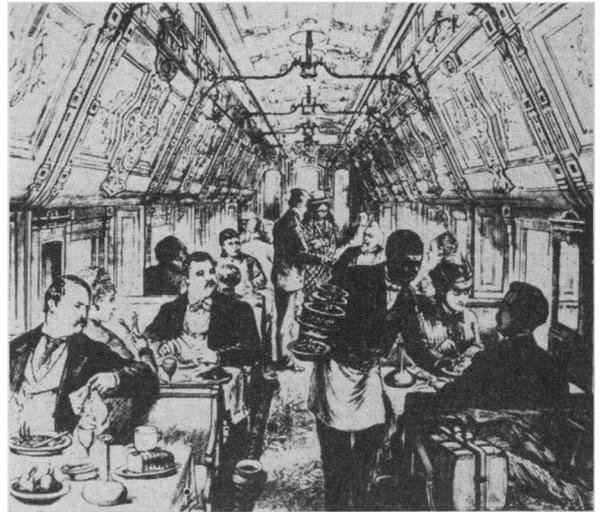
This Nation could ill afford to waste manpower sick abed—or buried—as a result of foodborne or other disease. The increased significance of the Public Health Service's responsibility to prevent the interstate spread of disease during the war emergency led to a major intensification of its railroad sanitation program. A large portion of the country at war was eating from the dining car's "hands," and these "hands" had to be kept clean.

As one of the first steps in discharging its increased responsibility, the Public Health Service in 1942 prepared the "Sanitation Manual for Land and Air Conveyances Operating in Interstate Traffic" (7) to provide public health and railroad workers with necessary information upon which to base their activities under the interstate quarantine regulations.

Mobile bacteriological laboratories of the Service toured the country. As part of their duties the laboratory staffs examined milk and water supplies used aboard dining cars and made swab tests of eating and drinking utensils to ascertain the adequacy of dishwashing and sanitizing methods aboard conveyances. Also, during this period, studies of the sanitation problems peculiar to dining car operation were being conducted by the Service.

After the war the railroads desired to reestablish, and even to improve, the traditional, pre-war, high-quality standards of their dining service. To aid them in their efforts, and to enhance its activities in the prevention of disease borne by food, milk, and water, the Service further expanded and intensified its dining car sanitation program. Additional personnel were employed and trained as inspectors, and liaison with railroad associations, individual companies, and designers and builders of dining cars was strengthened.

As a starting point in their program many railroads began planning the construction of new cars, and others undertook reconstruction



Courtesy Pullman-Standard Car Manufacturing Co.
One of the first Pullman "hotel" cars—1867.

of old ones which had been so overworked during the war. It had long been recognized that the plant where a conveyance is built or rebuilt is one of the best health control points. Placing greater emphasis on construction, Service personnel began to furnish consultative and inspectional services to designers and builders of railroad passenger cars.

One large company, in 1944, requested advice in designing new equipment and rehabilitating old cars. Thus was born the Service's plan-review program, under which plans for construction or major repair of conveyances are examined and are either approved or returned to the carriers with recommendations for changes. Under provisions of the interstate quarantine regulations, carriers are required to submit such plans or to arrange for Public Health Service inspection during construction.

In 1951, with the cooperation of the Joint Committee on Railway Sanitation of the Association of American Railroads and railroad car-building firms, the Public Health Service published the "Handbook on Sanitation of Railroad Passenger Car Construction" (8), which contains guides for incorporating sanitary provisions into the design or construction of railroad passenger cars and the reconstruction of existing cars.

Nowadays, before accepting delivery of a conveyance, a carrier usually specifies that the builder must obtain a Certificate of Sanitary

Construction from the Public Health Service. This certification, which shows that dining cars have been constructed or reconstructed in compliance with the interstate quarantine regulations, is mutually advantageous to the carrier and the builder. The builder is protected from future criticism; the purchaser is assured that his conveyance has been constructed in accordance with high standards which reflect decades of sanitary engineering knowledge. Of 230 new and rebuilt railway conveyances completed in 1951, 1952, and 1953, Certificates of Sanitary Construction were awarded for 144, or 63 percent.

Construction of Dining Cars

The typical modern dining car is about 85 feet long, seating 36 to 48 persons. Articulated twin units consist of 1 car, which seats from 64 to 68 persons, and an adjoining car, which contains the kitchen and either dormitory facilities, on an overnight run, or a lunch counter, if used in day service. Triple units have dining space in the cars at either end, with kitchen and dormitory facilities in the center car.

A multitude of limited facility cars are used either in combination with, or in lieu of, dining cars. These include coffeeshop, grill, lunch, cafe, buffet, counter, club, tap, bar, tavern, and lounge cars. Designs are usually as varied as the names, but they are not so different as their designations would suggest.

"Dining car," in Public Health Service sanitation terminology, means any railroad passenger conveyance on which food or drink is regularly prepared, stored, or served (9). Lounge and bar cars, snack cars, the recently introduced vending machine cars—and even the news butcher who peddles food and drink through coaches—all come under surveillance by Service inspectors.

Probably the most obvious condition one notes on his first entry into a dining car kitchen is that space is extremely restricted. Since the kitchen and pantry are, usually, only about 30 feet long, practically every inch of available space is utilized in their construction. Operations must be conducted efficiently, and the old maxim, "a place for everything and everything in its place," must be observed punctiliously.

Perishables must be refrigerated, utensils must be washed and treated bactericidally, and all of the other facilities required for full-scale restaurant operations must be crowded into a little more than one-third of the area of a railroad passenger car. Consider, in addition, the proximity and heat of the ranges and the lurching and swaying of the train as it travels at high speed, and you may well be amazed that meals of such quality, and in such quantity, can be prepared and served.

The "conventional" dining car is equipped with a coal range, charcoal broiler, steam table, steam coffee urn, manual dishwashing facilities, and ice refrigerators. Special studies, liberally garnished with trial-and-error experiments, demonstrated that certain structural changes would result in better cleanability and sanitation in dining car kitchens, and would at the same time improve the comfort, convenience, safety, and operating efficiency of crew members. Thus, in the "improved conventional" diner, the modifications made, usually, have been in the fuel used for cooking and the refrigeration method. Also, mechanical dishwashing and more electrical equipment are often added.

Many roads turned to pressed sawdust logs, instead of coal, for cooking fuel, because the pressed logs were more easily stored and their use resulted in a somewhat cooler and cleaner kitchen and eliminated the noxious coal gases. Other lines converted their ranges to burn oil, or butane or propane gas (10). These fuel improvements gave the employees a much cleaner and cooler kitchen and also faster and more uniform heat. There was, moreover, a saving of precious space, which is at a premium in any dining car kitchen. Certain roads by installing electric ranges further improved these factors.

Refrigeration came in for its share of modification. For many years railroads had used ice exclusively. But ice had some serious disadvantages as a refrigerant for dining car purposes. Its bulky form took up much valuable refrigerator space. More important, from the public health viewpoint, the uneven, relatively high, and uncontrollable temperatures often resulted in deterioration of foodstuffs and made possible the growth of any pathogenic bacteria which might have been present.



Courtesy Baltimore and Ohio Railroad, Inc.

Dinner in the modern diner.

Some railroads have found that dry ice (carbon dioxide) refrigeration overcomes the shortcomings of ice made from water (11). Since dry ice is more compact, it conserves space needed for the storage of perishable foods. Dry ice refrigeration units may be equipped with thermostatic controls which permit, to some extent, the stocking of frozen foods. Moreover, dry ice lasts six times as long as water ice. Icing is done inside the car, thus eliminating the need for overhead ice bunkers through which dust often entered.

Several carriers have installed mechanical refrigeration. Elimination of ice storage compartments of any kind increases refrigerator capacities by as much as 30 to 40 percent. The low temperatures which can be achieved and

their high degree of uniformity enable the wide use of frozen food products.

Blueprints for an "all electric" diner were drawn in 1936, but the first such car was not actually built until 1949 (12). Two-story dining cars are now under construction. Even three-level diners are within the realm of speculation. As railroads seek new methods of improving their dining service, the future appears to point to the electronic diner which is, in fact, already in limited use (13). The most important use of electronics will be, probably, in the realm of microwave cooking, or what may be more accurately described as "food conditioning." Experimentation with this method (14), conducted by railroads in the past few years, has demonstrated that the system has

several important advantages over current methods. It will solve many of the existing sanitation problems, but it will, undoubtedly, intensify or create others.

Although dust control is a problem, to a certain degree, in practically any food establishment, the problem is much greater on dining cars. Special precautions must be taken since roadbed dust which might carry pathogenic bacteria is easily sucked into these mobile restaurants as the trains speed along. Caps must be provided over floor and refrigerator drains, or water-sealed traps must be built into drainlines, to prevent the infiltration of dust. Windows and doors must be sealed or tightfitting. The practice of opening the kitchen loading door to increase air circulation long ago was recognized by the Service as a potential hazard.

Adequate ventilation of dining car kitchens has long been of concern to railroad officials, operating crews, passenger car builders, and the Public Health Service. Early attempts to reduce radiant heat, improve ventilation, and enhance crew comfort included the application of grills with filters to the side doors and the increased use of exhaust fans. Smoke pipes, oven doors, and the fronts of combustion chambers were insulated, and movable insulated shields were installed in front of the stoves for the protection of the cooks.

Each of these measures improved conditions to some degree, but dining car kitchens continued to be far from ideal work areas. Until recently, despite the modernization of passenger accommodations beginning around 1930, little attention had been given to the air conditioning and ventilation of kitchens and pantries. The design engineer was confronted with many developmental problems, and it was not until 1946 that the first forced-air ventilation system for a dining car kitchen was built. Numerous improvements have been made since then, but other problems remain to be solved.

At least one railroad (and there are indications that others might follow) has adopted a new type of diner with open kitchen and pantry, permitting its crew to prepare short-order meals in the air-conditioned atmosphere enjoyed by passengers. An added advantage is that, since the crew works in their constant view, the passengers become their own public health in-

spectors. This tends to influence the crew to maintain a high degree of cleanliness.

Other notable improvements in the sanitary construction of dining cars in recent years include:

- Increased use of noncorrodible, nonporous, and easily cleanable materials, such as stainless steel.

- Rounding of joints, filling and finishing of construction seams, and enclosing of inaccessible spaces, to promote cleanability and to eliminate harborage for vermin.

- Installation of adequate and convenient hand-washing facilities.

- Provision of proper facilities for washing and bactericidal treatment of utensils, whether done by manual or mechanical means.

- Improved methods of storing or disposing of garbage.

- Increased lighting on working surfaces and in lockers and refrigerators.

- Provision of suitable facilities for the storage and washing of ice for use in beverage glasses.

- Installation of wells with hot or running water for storage of frozen dessert dispensers.

- Construction of shelves, can openers, tray and knife racks, and other equipment so they can be easily removed and cleaned.

Also, increased use of dormitory cars with sleeping, ablutionary, toilet, and clothing storage facilities has encouraged personal hygiene of crew members and contributed materially to sanitation of dining cars. Some railroads bought new equipment for this purpose. Others converted old coaches, lounge cars, or other equipment into employees' quarters.

Public Health Service Inspections

The Association of American Railroad Dining Car Officers and the Association of American Railroads' Joint Committee on Railway Sanitation assisted in the preparation of a manual, the "Handbook on Sanitation of Dining Cars in Operation" (9), published in 1952, which was designed to assist those who must apply the principles of food sanitation in routine dining car operation and maintenance.

The official dining car inspection report is based on the sanitation standards given in the

published handbooks. Weights have been assigned the various items of sanitation on the form so that dining cars can be rated numerically. This affords a means of comparison, both among cars of one railroad and among the diners of different carriers. It is, also, a means of measuring and evaluating advancement in the dining car sanitation program.

More than 2,000 dining car inspections are conducted annually. Continuous improvement in sanitation of dining cars in operation is indicated by the gradual rise of the national average sanitation rating of all conveyances inspected. The average rating rose from 86.7 in 1951 to 89.0 in 1953. A Certificate of Sanitation is awarded to a carrier for each dining car which rates 95 or higher on inspection. The certificate is posted aboard the conveyance where it can be easily seen by passengers and employees, thereby stimulating interest in sanitation and promoting competition among crews. Certificates of Sanitation were issued for only 17.3 percent of the dining car inspections in 1951. The percentage increased to 24.1 in 1953. Also, in that year, the Service awarded a special citation to the first major railroad whose dining cars had all rated Certificates of Sanitation (15, 16).

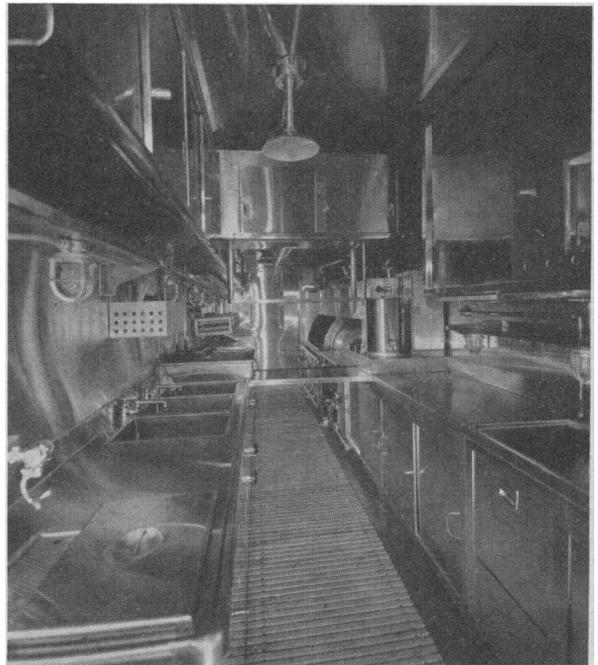
The "good ol' days" custom of obtaining meals at station stops has been continued on certain runs; it is being revived or initiated on others. Sanitation of these establishments comes under local control since they cater also to the non-traveling public.

Supplying dining cars, particularly with perishables, is a serious consideration. Commissaries with adequate storage and handling facilities and competent personnel must be established along the line to restock the cars on long runs. Since these establishments, of which there are about 200, do not serve the local public, they are usually inspected only by the Service.

The use on trains of vending machines which dispense sandwiches, ice cream, cake, crackers, doughnuts, fruit, candy, coffee, milk, juices, and soft drinks has increased in the past few years. There are indications that this trend may continue. The machines, usually installed in a coach, may supplement or supplant dining car service. Preparation, storage, and handling of

foods at supply sources, replenishment of stocks aboard cars, and cleaning and servicing of machines—all are scrutinized by Service inspectors. In addition, close liaison is maintained with equipment designers and fabricators to assure, for example, that refrigeration is adequate, that the machines are easily cleanable, that food contact surfaces are of nontoxic materials, and that vermin harborages are not afforded within the units.

Much has been done to ascertain and inspect sources of prepared sandwiches sold by the



Courtesy ACF Industries, Inc.

Kitchen and pantry of a modern dining car.

news butcher. In the past, disease outbreaks which have been attributed to such foods were traced to questionable sources of supply. Personal hygiene of employees has not always been up to desirable standards. Refrigeration has often been inadequate, and storage and disposal of garbage and other refuse have frequently been unsatisfactory. To overcome these hazards, many railroads do their own vending from the dining cars, by sending crew members through the train with food and drink. In any case, concessionaires are held to the same rigid standards of food sanitation as the dining car department, and they are subject to the same strict and frequent inspections.

To assure compliance with those provisions of the interstate quarantine regulations pertaining to the serving of wholesome foods, the safety of water, the purchase of shellfish from approved dealers, and the pasteurization of milk and frozen desserts, the dining car sanitation program extends beyond the railroad's facilities to the very sources of supply. Long-established arrangements have been continued with State health departments for routine supervision of suppliers. Each year about 3,000 inspections are made of sources of water, milk, and frozen desserts.

To keep carriers informed of the status of each supplier, the Service publishes the "Official Classification of Railroad Watering Points" and the "Official Classification of Milk and Frozen Dessert Sources." These are semi-annual listings of sources of supply which have been inspected and classified as approved, provisionally approved, or prohibited for the use of interstate carriers. Provisionally approved sources must effect the necessary corrective action without delay or they risk being classified as prohibited sources. Lists of shellfish dealers who hold unexpired and unrevoked certificates issued by State authorities also are published regularly by the Service.

Disease Outbreaks

If a disease outbreak occurs on a train, or is suspected of resulting from food or drink consumed or environmental conditions encountered on a conveyance, the Public Health Service and State and local health departments have technicians who cooperate in epidemiological surveys to determine the cause of the outbreak and to prevent recurrence. Fortunately—no doubt as a result of the far-reaching preventive measures—railroads find it necessary to avail themselves of this service very infrequently.

Data on disease outbreaks resulting from food or drink consumed on dining cars are indeed meager. This is easily understandable. It is well known to public health workers that complete and accurate reporting of all disease outbreaks is virtually impossible. This is particularly true of most food-poisoning illnesses which, though often violent, are of comparatively short duration. Many victims do not seek

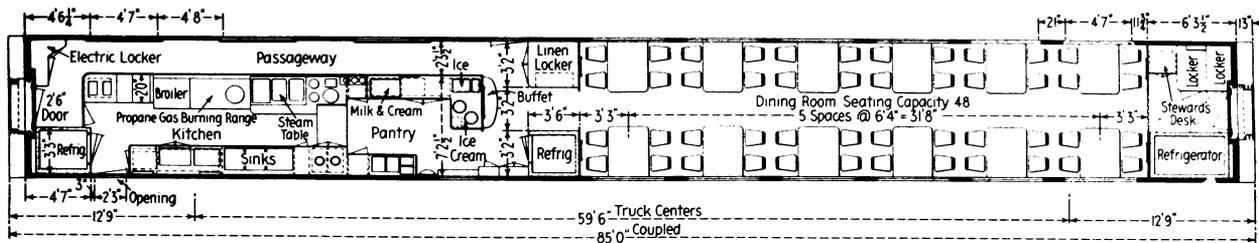
medical assistance, and recovery is usually rapid and complete. Because railroad passengers scatter to various parts of the country upon completion of their journeys, epidemiological investigations are complicated. Generally, cases are reported to public health officials only when the outbreak occurs en route, when many affected passengers disembark at a common terminal, or when groups of afflicted passengers travel together in special parties.

During the 1942-45 wartime period, 10 disease outbreaks involving 668 persons, of whom 434 were military personnel, were traced to food or drink consumed on railroad trains. In the next 8 years (1946-53), as the dining car sanitation program gained momentum, 5 outbreaks with 75 cases were reported. Two of these, totaling 40 cases, occurred during one extensive special movement in which railroads were taxed to the limit, requiring the use of much standby equipment and the employment of many extra personnel. Notwithstanding the acknowledged shortcomings of morbidity reporting peculiar to outbreaks among railway passengers, available statistics appear to substantiate the effectiveness of the Service's dining car program.

Training for Employees

Through routine inspections of dining cars in operation, the Public Health Service found that structural improvements alone would not raise sanitation to the desirable level. To reduce the possibility of foodborne illness, employees needed to have a thorough understanding of the principles and reasons for food service sanitation, proper use of equipment, and approved methods of conducting operations. Railroad officials agreed with this conclusion, and intensive training programs became the order of the day, beginning in the 1940's.

Some of these training courses are conducted by the carriers themselves. Some are conducted exclusively by the Public Health Service. But, generally, dining car departments and the Service collaborate closely. Sometimes a dining car is turned into a classroom, and courses are held in commissaries, union halls, or other available meeting rooms. Teaching methods vary, but the emphasis is on informal discussions.



Courtesy of Car Builders' Cyclopedia.

Floor plan of a typical dining car.

Occasionally, carriers make attendance mandatory at training courses; but, for most, it is voluntary. In either case, there usually is little discernible difference in the turnout or level of interest. Crew members seem glad to have the opportunity to discuss their problems and to learn approved methods and standards of food sanitation. Many, of their own volition, attend subsequent training sessions. The Public Health Service issues a wallet-sized Certificate of Attendance to each employee completing the course.

Some carriers have requested refresher courses at 6-month intervals. Dining car employees' organizations have become enthusiastic about the promotion and expansion of such refresher training. Significant improvement in operation of diners has been noted on many carriers, and there have been definite indications that the training sessions have impressed the crews with the importance of the principles of sanitation and hygiene.

One dining car superintendent, whose company in 1 year spent \$8,000 on training courses, remarked, "The improvement in operations accruing from food service employees' training programs is in itself sufficiently substantial a return for the investment made."

Most railroads, in an effort to improve and maintain sanitary conditions on their diners, engage traveling inspectors or inspection teams who board cars in service, observe operations, call attention to defects in equipment and methods, and give instruction in proper food service. A recent innovation has been the training by the Service, of inspectors of certain companies to follow the official Public Health Service inspection procedure. Ratings obtained by these inspectors are not considered official for the purpose of issuing Certificates of Sanitation,

or for computing the annual average rating of their cars. However, this system has proved to be a valuable adjunct to the Service program and has significantly raised the level of sanitation on diners.

Education of employees is a never ending phase of the dining car sanitation program. Personnel of the Service's regional offices give instruction in food service sanitation, interpret regulations for carriers as an aid in the formulation of company rules governing dining car employees, and assist carriers in developing visual aids and other education materials.

In 1953, the Public Health Service produced its first film devoted specifically to the subject of dining car sanitation. This visual aid, actually a filmstrip, is entitled "Food Sanitation in Dining Cars." It was produced with the cooperation of the Association of American Railroad Dining Car Officers and is available to carrier companies or employee organizations.

Many carriers now have company publications devoted exclusively or in part to dining car service. These usually include items on particular phases of sanitation, to serve as constant reminders to crew members that sanitation is a never ending and exceedingly important part of their service.

The advancement in dining car sanitation is all the more remarkable when one considers that no railroad has ever, with the exception of the war years, realized a profit from the operation of dining cars (5). Still, development and improvement of dining service are proceeding persistently, and railroads are justifiably proud of their equipment, food, and service.

While the Public Health Service program of dining car sanitation has its legal basis in the Interstate Quarantine Regulations, it has been conducted, historically, on a cooperative and

educational basis with the carriers. The Service is primarily interested, not in arbitrary exercise of its powers, but in a high level of sanitation on dining cars. Because virtually all carriers are intent on the same objective, the program has traditionally had their wholehearted support.

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